

WHAT IS CLAIMED IS:

1. A styrenic resin composition having at least improved toughness properties comprising:

from about 92.0% to about 99.9% by weight  
5 rubber modified styrene maleic anhydride copolymer;  
and

from about 0.1% to about 8.0 % by weight of  
polybutene based on the weight of the styrenic resin  
composition.

10 2. A styrenic resin composition of claim 1 wherein  
the amount of said polybutene ranges from about 2%  
to about 6% by weight based on the weight of the  
styrenic resin composition.

15 3. A styrenic resin composition of claim 2 wherein  
the amount of said polybutene ranges from about 3%  
to about 5% by weight based on the weight of the  
styrenic resin composition.

4. A styrenic resin composition of claim 1 wherein  
said polybutene has a number average molecular  
20 weight ranging from about 900 to about 2500.

5. A styrenic resin composition of claim 4 wherein  
said polybutene has a number average molecular  
weight ranging from about 900 to about 1300.

25 6. A styrenic resin composition of claim 1 wherein  
said styrenic resin composition is prepared by  
adding the polybutene to styrene monomers, maleic  
anhydride, and rubber in a polymerization reactor  
vessel under free radical polymerization techniques.

30 7. A styrenic resin composition of claim 1 wherein  
said styrenic resin composition is prepared by  
adding the polybutene to partially polymerized syrup  
comprised of rubber, styrene, and maleic anhydride

after the syrup exits a polymerization reactor vessel and enters a devolatilizer.

8. A styrenic resin composition of claim 1 wherein said rubber modified styrene maleic anhydride  
5 copolymer is comprised of from about 2% to about 25% by weight of maleic anhydride and from about 4% to about 20% by weight of rubber based on the weight of said rubber modified styrene maleic anhydride copolymer.

10 9. A styrenic resin composition of claim 8 wherein the amount of rubber ranges from about 8% to about 15% by weight.

10. A styrenic resin composition of claim 8 wherein the particle size of the rubber ranges from about  
15 0.1 micron to about 11 microns.

11. A styrenic resin composition of claim 8 wherein the particle size of the rubber is less than 6 microns.

12. A styrenic resin composition of claim 11  
20 wherein the particle size of the rubber ranges between from about 0.1 micron to about 5 microns.

13. A styrenic resin composition of claim 8 wherein said rubber is polybutadiene.

14. A styrenic resin composition of claim 13  
25 wherein said rubber is selected from the group consisting of high cis polybutadiene and medium cis polybutadiene.

15. An article produced from the styrenic resin composition of claim 1.

30 16. A container suitable for use in microwave heating of food and formed from the styrenic resin composition of claim 1.

17. A multi-layer container suitable for use in microwave heating of food, said container comprising a substrate layer and a layer comprised of the styrenic resin composition of claim 1.

5 18. A method for preparing the styrenic resin composition of claim 1 comprising:

adding polybutene to partially polymerized syrup comprised of rubber, styrene, and maleic anhydride after the syrup exits a reactor and enters a devolatilizer.

10 19. A method for preparing the styrenic resin composition of claim 1 comprising:

forming a solution of polybutene, maleic anhydride, and rubber by dissolving the polybutene, the maleic anhydride and the rubber in styrene monomer,

continuously feeding the solution with said styrene monomer into a polymerization reactor vessel, and

20 devolatilizing the stream exiting the polymerization reactor vessel thereby producing the styrenic resin composition.

20. A method for preparing the styrenic resin composition of claim 1 comprising:

25 adding polybutene and styrene maleic anhydride rubber feed separately into a polymerization reactor vessel,

polymerizing the styrene maleic anhydride feed in the presence of the polybutene and the rubber in the polymerization reactor vessel, and

devolatilizing the stream exiting the polymerization reactor vessel thereby producing the styrenic resin composition.

21. A method for preparing the styrenic resin composition of claim 1 comprising:

forming a solution of maleic anhydride and rubber in styrene monomer,

continuously feeding said solution with said styrene monomer into a polymerization reactor vessel to produce a partially polymerized styrenic syrup,

adding polybutene to said partially polymerized styrenic syrup after it exits the reactor vessel and

devolatilizing the stream after the polybutene has been added to the partially polymerized styrenic syrup thereby producing the styrenic resin composition.

22. A method for preparing the styrenic resin composition of claim 1 comprising:

forming a solution of maleic anhydride and rubber in styrene monomer,

continuously feeding said solution with said styrene monomer into a polymerization reactor vessel to produce a partially polymerized styrenic syrup,

devolatilizing the stream exiting the polymerization reactor vessel, and

compounding polybutene into the stream in an extrusion process thereby producing the styrenic resin composition.

23. A method for preparing the styrenic resin composition of claim 1, comprising:

adding said polybutene to said rubber modified  
styrene maleic anhydride copolymer after the  
devolatilizer and the pelletizer.

24. A method for preparing the styrenic resin  
5 composition of claim 1 comprising:

adding said polybutene to said rubber modified  
styrene maleic anhydride copolymer after the  
devolatilizer and before the pelletizer.

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